

MATERIAL SAFETY DATA SHEET

200000433/F/USA
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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: KODAK TECHNIDOL Liquid Developer

Catalog Number(s): 108 3849 - To Make 16 fluid ounce(s)

Manufacturer/Supplier: EASTMAN KODAK COMPANY, Rochester, New York 14650

For Emergency Health, Safety & Environmental Information,

For other information or to request an MSDS, call (800) 242-2424.

Synonym(s): Concentrate: KAN 443531; PCD 5268
Working solution: KAN 966053

2. COMPOSITION/INFORMATION ON INGREDIENTS

Weight % - Component - (CAS Registry No.)

Concentrate:

85-90 Diethylene glycol (000111-46-6)
5-10 Diethanolamine-sulfur dioxide complex (063149-47-3)
1-5 Water (007732-18-5)
1-5 Tris(1-methylethyl)naphthalene sulfonic acid sodium salt
(001323-19-9)
1-5 1-phenyl-4,4-dimethyl-3-pyrazolidinone (002654-58-2)
1 Hydroquinone (000123-31-9)

Working solution:

90-95 Water (007732-18-5)
5-10 Diethylene glycol (000111-46-6)
< 1 Diethanolamine-sulfur dioxide complex (063149-47-3)
< 1 Tris(1-methylethyl)naphthalene sulfonic acid sodium salt
(001323-19-9)
< 0.1 Hydroquinone (000123-31-9)

3. HAZARDS IDENTIFICATION

Concentrate:

CONTAINS: Diethylene glycol (000111-46-6), Hydroquinone (000123-31-9),
1-phenyl-4,4-dimethyl-3-pyrazolidinone (002654-58-2),
Tris(1-methylethyl)naphthalene sulfonic acid sodium salt (001323-19-9),
Diethanolamine-sulfur dioxide complex (063149-47-3)

DANGER!

POISON

MAY BE FATAL IF SWALLOWED

CAN CAUSE KIDNEY DAMAGE

MAY CAUSE LIVER DAMAGE BASED ON ANIMAL DATA

CAN CAUSE CNS EFFECTS

POTENTIAL PEROXIDE FORMER

CAUSES EYE IRRITATION

MAY CAUSE ALLERGIC SKIN REACTION

HARMFUL IF INHALED OR ABSORBED THROUGH SKIN

THE TOXICOLOGICAL PROPERTIES OF A MINOR COMPONENT OF THIS MIXTURE HAVE
NOT BEEN FULLY INVESTIGATED

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BASED ON REPEATED-DOSE INGESTION STUDIES IN ANIMALS, A MINOR COMPONENT OF THIS PRODUCT MAY CAUSE BLOOD, TESTICULAR, AND ADVERSE REPRODUCTIVE EFFECTS

HMIS Hazard Ratings:

Health - * 2, Flammability - 1, Reactivity - 0, Personal Protection - C

NFPA Hazard Ratings:

Health - 2, Flammability - 1, Reactivity (Stability) - 0

Working solution:

CONTAINS: Diethylene glycol (000111-46-6)

WARNING!

CAN CAUSE KIDNEY DAMAGE

CAN CAUSE CNS EFFECTS

HARMFUL IF SWALLOWED

HMIS Hazard Ratings:

Health - * 2, Flammability - 0, Reactivity - 0, Personal Protection - C

NFPA Hazard Ratings:

Health - 1, Flammability - 0, Reactivity (Stability) - 0

NOTE: HMIS and NFPA hazard indexes involve data review and interpretation that may vary among companies. They are intended only for rapid, general identification of the magnitude of the potential hazards. The personal protection index is only intended for general guidance on personal protection equipment (PPE) that is suitable for the potential hazards of the material. PPE (e.g., respirators) may not be needed if engineering controls (e.g., local ventilation) are adequate. An asterisk (*), in the HMIS health field, designates potential chronic or target organ hazards. To adequately address safe handling, ALL information in this MSDS must be considered. hazards. To adequately address safe handling, ALL information in this MSDS must be considered.

4. FIRST-AID MEASURES

Inhalation: If symptomatic, move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.

Eyes:

Concentrate: Immediately flush with plenty of water for at least 15 minutes. Get medical attention.

Working solution: Any material that contacts the eye should be washed out immediately with water. Get medical attention if symptoms occur.

Skin:

Concentrate: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Remove contaminated clothing and shoes. If skin irritation or an allergic skin reaction develops, get medical attention. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Working solution: Wash with soap and water. Get medical attention if

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symptoms occur.

Ingestion:

Concentrate: Induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Working solution: Only induce vomiting at the instruction of medical personnel. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media:

Concentrate: Water spray, carbon dioxide (CO₂), dry chemical, alcohol foam

Working solution: Use appropriate agent for adjacent fire.

Special Fire-Fighting Procedures:

Concentrate: Wear self-contained breathing apparatus and protective clothing. Fire or excessive heat may produce hazardous decomposition products.

Working solution: Wear self-contained breathing apparatus and protective clothing.

Hazardous Combustion Products:

Concentrate: Carbon dioxide, carbon monoxide, oxides of sulfur, oxides of nitrogen

Working solution: None (noncombustible)

Unusual Fire and Explosion Hazards:

Concentrate: May form peroxides of unknown stability.

Working solution: None

6. ACCIDENTAL RELEASE MEASURES

Flush to sewer with large amounts of water. Otherwise, absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination.

7. HANDLING AND STORAGE

Personal Precautionary Measures:

Concentrate: Avoid breathing mist. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling.

Working solution: Avoid prolonged or repeated breathing of mist or vapor.

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Avoid contact with eyes and prolonged or repeated contact with skin. Use with adequate ventilation. Wash thoroughly after handling.

Prevention of Fire and Explosion:

Concentrate: Keep from contact with oxidizing materials. If peroxide formation is suspected, do not open or move container. Minimize exposure to air. Do not allow to evaporate to near dryness.

Working solution: No special precautionary measures should be needed under anticipated conditions of use.

Storage:

Concentrate: Keep container closed. Store away from heat and light. Keep away from incompatible substances (see Incompatibility section).

Working solution: Keep container closed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

ACGIH Threshold Limit Value (TLV):

Hydroquinone: 2 mg/m³ TWA

Eastman Kodak Company industrial hygiene guideline:

1-phenyl-4,4-dimethyl-3-pyrazolidinone: 0.2 mg/m³ TWA

AIHA Workplace Environmental Exposure Level (WEEL):

Diethylene glycol: 10 mg/m³ TWA, mist; 50 ppm TWA, total

OSHA (USA) Permissible Exposure Limit (PEL - 1971 Table Z-1 Values):

Hydroquinone: 2 mg/m³ TWA

Ventilation:

Concentrate: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation, closed systems, or respiratory protection may be needed in special circumstances such as poorly ventilated spaces, evaporation from large surfaces, spraying, heating, etc.

Working solution: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions.

Respiratory Protection:

Concentrate: If engineering controls do not maintain airborne concentrations to an acceptable level, an approved respirator must be worn. Respirator type: Organic vapor. If respirators are used, a program should be instituted to assure compliance with OSHA Standard 29 CFR 1910.134.

Working solution: None should be needed.

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Eye Protection:

Concentrate: Wear safety glasses with side shields (or goggles).

Working solution: It is a good industrial hygiene practice to minimize eye contact. Wear safety glasses with side shields (or goggles).

Skin Protection:

Concentrate: Wear impervious gloves and protective clothing appropriate for the risk of exposure.

Working solution: It is a good industrial hygiene practice to minimize skin contact. For operations where prolonged or repeated skin contact may occur, impervious gloves should be worn.

Recommended Decontamination Facilities: Eye bath, washing facilities, safety shower

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form: Liquid

Color:

Concentrate: Light yellow

Working solution: Colorless

Odor:

Concentrate: Fishy

Working solution: Odorless

Specific Gravity (water = 1):

Concentrate: 1.13

Working solution: 1.00-1.03

Vapor Pressure at 20°C (68°F):

Concentrate: 0.05 mbar (0.04 mm Hg)

Working solution: 24 mbar (18 mm Hg)

Vapor Density (Air = 1):

Concentrate: 0.4

Working solution: 0.6

Volatile Fraction by Weight:

Concentrate: 5%

Working solution: 90-95%

Boiling Point:

Concentrate: 200°C (392°F)

Working solution: >100°C (>212°F)

Solubility in Water: Complete

pH:

Concentrate: 9.3

Working solution: 8.8-8.9

Flash Point:

Concentrate: >93°C (>200°F) (estimated)

Working solution: None, noncombustible liquid

10. STABILITY AND REACTIVITY

Stability: Stable

Incompatibility:

Concentrate: Strong oxidizing agents, strong acids, strong bases

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Working solution: None with common materials and contaminants with which the material may reasonably come into contact.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Effects of Exposure:

General:

Contains: diethanolamine-sulfur dioxide complex. May cause kidney damage based on animal data. May cause liver damage based on animal data.

Contains: 1-phenyl-4,4-dimethyl-3-pyrazolidinone. Based on repeated-dose ingestion studies in animals, 1-phenyl-4,4-dimethyl-3-pyrazolidinone, a minor component of this product may cause blood, testicular, and adverse reproductive effects.

Contains: diethylene glycol. Can cause kidney damage. Can cause CNS effects.

Contains: hydroquinone. There is insufficient evidence for classifying hydroquinone as a suspected carcinogenic or mutagenic substance in humans. No increases in cancer rates were observed in an epidemiology study which looked at mortality among more than 800 persons employed primarily in the manufacture of hydroquinone.

Carcinogenicity studies in animals were inconclusive. Rats and mice were given hydroquinone by stomach tube or at high concentrations in the diet. Responses were not consistent across route of exposure, species or sex. The International Agency for Research on Cancer (IARC) has classified hydroquinone in Group 3, i.e., "not classifiable" as a carcinogen. Hydroquinone is generally negative in bacterial mutagenicity tests; there is evidence for the clastogenicity (chromosome breakage) of hydroquinone in vivo and in vitro. The relevance of chromosomal effects in test animals in predicting human risk is unclear.

Contains Tris(1-methylethyl)naphthalene sulfonic acid sodium salt. The toxicological properties of this material have not been evaluated. Health hazard evaluation based on a structurally similar material.

Inhalation:

Concentrate: Harmful if inhaled.

Working solution: Low hazard for recommended handling.

Eyes:

Concentrate: May be irritating.

Working solution: No specific hazard known. May cause transient irritation.

Skin:

Concentrate: Harmful if absorbed through skin. May cause allergic skin reaction based on human experience. May cause skin depigmentation. Prolonged or repeated contact with aqueous solutions may cause irritation.

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Working solution: Low hazard for recommended handling.

Ingestion:

Concentrate: May be fatal if swallowed.

Working solution: Harmful if swallowed.

12. ECOLOGICAL INFORMATION

The following properties are ESTIMATED from the components of the preparations.

	Concentrate	Working Solution
Potential Toxicity		
Fish LC50 mg/l:	1-10	>100
Daphnid EC50 mg/l:	1-10	10-100
Algal IC50 mg/l:	10-100	>100
Organics Readily Degradable (>70%):	Yes (7 days)	Yes (7 days)
Potential Bioaccumulation:	Log Pow <1	Log Pow <1
COD (approximate g/l):	1710	105
BOD5 (approximate g/l):	205	10
Potential Toxicity		
Waste treatment microorganisms EC50 (mg/l):	Not available	Not available

13. DISPOSAL CONSIDERATIONS

Discharge, treatment, or disposal may be subject to national, state, or local laws. Consult state or local regulatory authorities before flushing to sewer with large amounts of water.

Concentrate: Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. TRANSPORT INFORMATION

For transportation information regarding this product call the Kodak Worldwide Transportation Hazmat Hot Line: (585) 722-2400 between 8 a.m. and 5 p.m. (Eastern Standard Time), Monday through Friday.

15. REGULATORY INFORMATION

- Material(s) known to the State of California to cause cancer: None
- Material(s) known to the State of California to cause adverse reproductive effects: None

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- Carcinogenicity Classification (components present at 0.1% or more):
 - International Agency for Research on Cancer (IARC): Hydroquinone, Group 3, not classifiable
 - American Conference of Governmental Industrial Hygienists (ACGIH): hydroquinone (A3), Confirmed animal carcinogen with unknown relevance to humans
 - National Toxicology Program (NTP): None
 - Occupational Safety and Health Administration (OSHA): None
 - Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372: Hydroquinone

16. OTHER INFORMATION

US/Canadian Label Statements:

Concentrate:

CONTAINS: Diethylene glycol (000111-46-6), Hydroquinone (000123-31-9), 1-phenyl-4,4-dimethyl-3-pyrazolidinone (002654-58-2), Diethanolamine-sulfur dioxide complex (063149-47-3), Tris(1-methylethyl)naphthalene sulfonic acid sodium salt (001323-19-9)

DANGER!

POISON

MAY BE FATAL IF SWALLOWED

CAN CAUSE KIDNEY DAMAGE

MAY CAUSE LIVER DAMAGE BASED ON ANIMAL DATA

CAN CAUSE CNS EFFECTS

CAUSES EYE IRRITATION

MAY CAUSE ALLERGIC SKIN REACTION

HARMFUL IF INHALED OR ABSORBED THROUGH SKIN

THE TOXICOLOGICAL PROPERTIES OF A MINOR COMPONENT OF THIS MIXTURE HAVE NOT BEEN FULLY INVESTIGATED

POTENTIAL PEROXIDE FORMER

BASED ON REPEATED-DOSE INGESTION STUDIES IN ANIMALS, A MINOR COMPONENT OF THIS PRODUCT MAY CAUSE BLOOD, TESTICULAR, AND ADVERSE REPRODUCTIVE EFFECTS

Keep container closed.

Store away from heat and light.

Do not allow to evaporate to near dryness.

Avoid breathing mist.

Avoid contact with eyes, skin, and clothing.

Use with adequate ventilation.

Wash thoroughly after handling.

FIRST AID: If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. In case of contact, immediately flush eyes and skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Keep out of reach of children.

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Do not handle or use until safety precautions in Material Safety Data Sheet (MSDS) have been read and understood

Additional hazard precautions for containers greater than 1 gallon of liquid or 5 pounds of solid:

Since emptied containers retain product residue, follow label warnings even after container is emptied.

IN CASE OF FIRE: Use water spray, dry chemical, carbon dioxide (CO2), alcohol foam.

Working solution:

CONTAINS: Diethylene glycol (000111-46-6)

WARNING!

HARMFUL IF SWALLOWED
CAN CAUSE KIDNEY DAMAGE
CAN CAUSE CNS EFFECTS

Avoid contact with eyes and prolonged or repeated contact with skin.
Avoid prolonged or repeated breathing of mist or vapor.
Use with adequate ventilation.
Wash thoroughly after handling.

FIRST AID: If swallowed, only induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Keep out of reach of children.

For additional information, see Material Safety Data Sheet (MSDS) for this material.

The information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

R-2, S-2, F-1, C-1E REPO
WS:R-1, S-1, F-0, C-0